

Poverty in India over the Last Decade

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The release of microdata from the Household Consumption Expenditure Survey (2022–23) now allows evaluation of methodological advances on nowcasting poverty developed over the last decade. A key issue raised has been the difficulty in the use of national accounts consumption growth as a measure of survey consumption growth, with many using non-standard data sets provided by private sector while others developing imputation-based approaches using other NSSO surveys. Forecast errors provide a useful evaluation technique for these advances. The simple approach of using consumption growth from national accounts outperforms each of these methods and does so in a significant manner.

In this paper, we provide a range of poverty estimates for India, including rural and urban poverty estimates for different states, using the recently released microdata from the Household Consumption Expenditure Survey (HCES 2022–23). Using the World Bank's \$1.9 purchasing power parity (PPP) and \$3.2 PPP poverty lines, we construct state-level rural and urban poverty lines for 2022–23¹ for the generation of state-level poverty estimates. National poverty estimates are based on an urbanisation rate of 30.3% for 2011–12 and 35.9% for 2022–23.

At the World Bank's extreme poverty line of \$1.9 PPP, India appears to have eliminated extreme poverty (a national poverty rate of 2.2% without adjustment of consumption expenditures for food and other subsidies). In addition, there has been a substantial decline in the poverty headcount ratio (HCR) at the higher poverty line (\$3.2 PPP) from 53.6% in 2011–12 to 21.8% in 2022–23. Given the pace of poverty alleviation, and the present low level of \$3.2 PPP poverty, we recommend an upward revision of the \$3.2 PPP poverty line to adequately capture broader deprivation. Note that the United States (US) has approximately the same level of poverty (12%) as their own poverty line (set in the mid-1960s). An appropriate new poverty line should generate a poverty level of approximately 25% to 33%; the original US poverty line estimated poverty to be close to 20% of the population.

The structure of the paper is as follows. It discusses the methodological innovations that were undertaken to nowcast poverty in India in the absence of a recent official consumption expenditure survey in the next section. The released 2022–23 data now provides an opportunity to evaluate these methods. A critical aspect of nowcast models is the assumption of survey-based growth rates in consumption. The simple application of growth from national accounts seems to outperform most (if not all) of these methods.

Next, we discuss methodological changes between the HCES 2022–23 and the previous surveys. We argue that improvements in surveying techniques are standard and therefore cannot be considered as the grounds for non-comparability of surveys (as some have argued). External validity to survey growth estimates based on administrative data discussed in Bhalla et al (2022) further indicates that improvements in the measurement of consumption expenditures, if anything, are likely to be statistically small. Table 1 reports the national monthly per capita

Table 1: National Accounts and Monthly Survey Consumption Expenditures

Survey Year	National Accounts PFCE (₹ Trillions)	Population (Billions)	MPCE (₹)
2011–12	49	1.258	1,802
2022–23	164	1.417	4,470

Source: Authors' calculations using HCES 2011–12, HCES 2022–23 and National Accounts.

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consumption expenditure (MPCE) estimates along with the private final consumption expenditure (PFCE) estimates for 2011–12 and 2022–23. Note that despite much-needed improvements in the measurement of consumption by the survey, the survey-to-national accounts ratio declined from approximately 63% in 2011–12 to 59% in 2022–23.

A word of caution in the generation and use of survey-to-national account ratios to estimate and “evaluate” data quality is offered. Household surveys do not cover all household expenditures. We estimate that 13% of national accounts expenditures (PFCE) were missing in household surveys in 2011–12 and that this fraction had increased to 17% in 2022–23 (estimate derived from itemised expenditures as reported in www.ceic.com).

Further, we discuss subnational estimates from the survey. We begin by comparing poverty estimates from 2022–23 with estimates for 2011–12. This is followed by an examination of whether there is some evidence of lower “dispersion” in HCR rates. Further, we provide detailed rural and urban poverty estimates and poverty lines for both \$1.9 PPP and \$3.2 PPP poverty lines. These estimates are also available for download at <https://www.living-standards.org/>. After that, we outline the need for a new poverty line. Finally, we conclude.

Poverty Estimates over the Last Decade

The conventional method for nowcasting poverty in between survey years is to use the given consumption (or income) distribution from the previous survey and apply a growth factor for all households—the implicit assumption is that all households experience the same per capita growth rate.

The limitation of this method is that it does not provide any information about the changes in income or consumption distribution. However, in between survey years, the consumption or income distribution is unlikely to change significantly.

Bhalla et al (2022a) adopt this approach and found validity for the assumption of economic growth equal to observed national accounts growth in per capita consumption. However, literature over the last few years has criticised the use of this simple method owing to the possibility of different growth rates in national accounts consumption and mean survey consumption. This difference could be attributed to a variety of reasons. For example, there can be improvements in capturing of national income and/or household surveys may not systematically capture the upper (or lower) tail of the consumption distribution. Meyer et al (2015) point out unit and item non-response as key challenges for household surveys, factors which can also lead to divergence in survey and national accounts growth.

The World Bank recommends the use of a pass-through factor to scale down growth in national accounts to match an assumed and “reasonable” estimate of growth in survey consumption. They argue that the pass-through factor should be 0.67 in India’s case (Edochie et al 2022). This pass-through is much smaller than the actual observed pass-through of 0.94 in India, which is closer to the unity pass-through applied by Bhalla et al (2022a).² Table 2 documents the pass-through

rates observed for India and, except for one instance (growth between 1999 and 2004), the national accounts consumption pass-through to survey consumption has exceeded the unusually low World Bank pass-through factor of 0.67.

Table 2: Pass-through of National Accounts Consumption

Year	Levels			Pass through	
	PFCE-NA	MPCE_URP	MPCE*	MPCE_URP	MPCE*
	1	2		5	6
1973	48	48	48		
1977	77	72	72	86	86
1983	159	124	124	67	67
1987	221	176	176	111	111
1993	500	325	331	67	69
1999	951	577	579	86	83
2004	1,317	684	712	48	60
2007	1,827	955	955	103	88
2009	2,255	1,160	1,306	91	157
2011	2,846	1,599	1,773	145	136

MPCE* is MPCE_URP for 1973–87; MPCE_MRP is relevant for 1999 through 2007; and MMRP for 2009 and 2011. The years refer to agricultural years with 2011 implying July 2011 to June 2012.

Pass-through is defined as the ratio of MPCE growth to nominal PFCE growth. Source: Authors’ calculations using HCES (various years) and National Accounts.

An alternative approach proposed by Newhouse and Vyas (2019) uses different National Sample Survey (NSS) household consumption surveys and a survey-to-survey imputation method to forecast poverty. Roy and Weide (2022) use consumption data from a private survey and adjust the population weights—a procedure seemingly without precedent.

Apart from these World Bank estimates, there are several other estimates of poverty in India that have been generated through a simple application of poverty lines on other available consumption distributions either from official employment surveys or private surveys. The challenge to such an exercise is that most of these surveys have been launched recently, and much later than 2011. Consequently, these poverty estimates cannot be compared with historical poverty estimates. For the official employment–unemployment survey (Periodic Labour Force Survey), India’s statistical authorities have only one question on consumption expenditures during the initial years (recent surveys have five questions on consumption expenditures). The consumption aggregates derived from these questions are highly inaccurate.

The nowcasting procedure is straightforward. The objective is to generate a suitable consumption distribution—or growth factor—through a variety of different assumptions and methodological choices. The choice of growth factor focuses on keeping the distribution unchanged while attempting to estimate a more up-to-date distribution update both the mean consumption expenditures and the underlying distribution.

In light of the recently released 2022–23 consumption expenditure survey, each of these methods (and underlying assumptions) can be evaluated through a simple nowcast performance test. The lower the nowcast error, the more robust the “performance” of the method. Table 3 (p 62) summarises key findings over the last decade of different poverty estimates.

Table 3 reports the poverty headcount ratios for India at the \$1.9 PPP poverty line. The use of the unity pass-through factor

as undertaken by Bhalla et al (2022a) generates the closest poverty estimates to the estimates derived from the official survey. This result is not a coincidence but rather due to the long-run actual pass-through rate being close to 1, substantially higher than the pass-through proposed by Edochie et al (2022). Furthermore, the recent poverty and inequality platform (PIP) estimates based on recent work by Roy and Weide (2022) have a higher “forecast error” relative to previous World Bank estimates that used a lower pass-through factor of 0.67.

Table 3: Poverty HCR for India at the \$1.9 PPP Poverty Line

	2014	2017	2020	2022
Official survey				2.3
Bhalla et al (2022a)				
Modified mixed recall	7.4	2.9	2.5	
World Bank estimates				
Newhouse and Vyas (2019)	14.6			
Edochie et al (2022)		10.4		
World Bank PIP (Roy and Weide 2022)		13.2	15.5	

Source: Authors' compilation.

To summarise, the lowest forecast error in poverty estimates is with a pass-through rate of unity. This is followed by the World Bank method of applying a pass-through factor of 0.67, which generates a higher bias in poverty estimates; however, the bias is lower relative to some recent innovations in poverty estimation that rely on altering population weights and using private surveys.

HCES 2022–23 and Comparability Issues

Since the release of HCES 2022–23, there have been several concerns regarding the comparability of the survey with previous rounds. The HCES 2022–23 fact sheet contained a disclaimer regarding the methodological changes between the recent survey relative to the decade-earlier 2011–12 survey. Both the 2011–12 and the 2022–23 surveys follow the mixed modified recall period (MMRP) approach for measurement of consumption expenditures. The MMRP approach asks questions from households on a recall period of seven days for high-frequency consumption items such as perishables, 365 days for consumer durables and 30 days for all other items. The 2022–23 HCES is the first official survey that has been released which was solely conducted using the MMRP approach (HCES 2011–12 was conducted using both MMRP and the uniform recall period [URP of 30 days]).

There are two key differences between the HCES 2011–12 and HCES 2022–23. The first is the addition of newer consumption items in the present survey. This is a consistent practice which has been followed across the world (as newer goods and services are always added to the consumption basket and obsolete ones removed). A recent example would be the inclusion of online streaming platforms as a source of entertainment, which are now an important part of consumption distribution. A key purpose of the consumer expenditure survey is to get a distribution of consumption expenditures for the analysis of consumption baskets and poverty estimation. This is agnostic to the addition or deletion of consumption items as the consumption baskets change. Newer goods have been added in

the past, just as obsolete items such as gramophones have been dropped, a practice followed by almost all statistical agencies across the world.

The second change is a more substantial one as the present survey marks a departure from the past as it breaks down the questionnaire into three visits instead of one. This was done to better capture consumption expenditures and respond to concerns of respondent fatigue (as argued by many experts) given that the 2011–12 questionnaire took more than four hours. For example, NSS's key-focused surveys on consumption expenditures on consumer durables, social services (health and education), etc, found higher consumption expenditures on these items than the HCES. Therefore, transitioning to three visits is expected to improve the accuracy of the survey in capturing expenditures. A more accurate estimate of consumption expenditures is desired, and therefore, such improvements in survey techniques must be more frequent so as to improve the accuracy of the survey.

Further, a key concern while comparing the HCES 2022–23 with previous surveys would be if much of the increase in survey consumption is driven by improved accuracy. This concern can be empirically tested by comparing survey-to-national accounts ratio. A sharp increase in survey-to-national accounts ratio would be indicative of a key part of the increase in consumption being attributed to better measurement. However, the exact opposite occurs as the survey-to-national accounts ratio declines further from 63% in 2011–12 to 59% in 2022–23. Therefore, empirically there is no evidence to indicate non-comparability between the previous two surveys.

HCES 2022–23 and Subnational Poverty Estimates

Bhalla et al (2022b) used the World Bank's extreme poverty line (\$1.9 PPP) and the \$3.2 PPP poverty lines to compute poverty estimates. The \$1.9 PPP poverty line is approximately equal to India's last official poverty line (the Tendulkar poverty line), while the \$3.2 PPP provides a slightly higher poverty line to

Table 4: Poverty Headcount Ratio

Poverty Line	Nominal MPCE	All India		
		Rural	Urban	Headcount Ratio (%)
In 2011–12 prices				
2011–12	1,803			
\$1.90 PPP	–	12.2	12.9	10.7
\$3.20 PPP	–	53.6	59.7	40.1
2022–23	4,737			
\$1.90 PPP	–	2.3	2.6	1.4
\$3.20 PPP	–	21.8	24.0	15.6
Tendulkar poverty line		2.5	2.8	2.1
In 2017–18 prices				
\$2.15 PPP		2.4	2.7	1.7
\$3.65 PPP		23.0	24.9	17.7
Bhalla and Bhasin (2024)				
\$1.90 PPP	–	2.0	2.5	1.0
\$3.20 PPP	–	20.8	–	–

Bhalla and Bhasin (2024) estimates refer to the analysis of the fact sheet released by NSSO that contained different fractiles.

Urbanisation rate for 2011–12 is 30.3% while for 2022–23 it is 35.9%. The urbanisation rate for 2022–23 is derived from World Bank's estimates.

Source: Authors' computation using HCES 2011–12 and 2022–23.

compare poverty dynamics in India.³ Calculation of poverty, once microdata is available, is a straightforward application of a poverty line on consumption distribution.

The state-level \$1.9 PPP and \$3.2 PPP poverty lines are available for 2011–12 across different states. State-level rural and urban consumer price index (CPI) inflation can be used to adjust these poverty lines for their use in 2022–23.⁴

At the \$1.9 PPP poverty line, the headcount ratio has declined substantially from 12.2% to 2.3% over the last decade, contrary to the claims of an increase or no decline in poverty over the same period (Table 4, p 62). The decline in poverty is even starker at the higher poverty line of \$3.2 PPP from 53.6% to 21.8%.

Table 5 summarises the poverty HCR across different states between 2011–12 and 2022–23. Given the relatively small poverty HCR at \$1.9 PPP, we focus our discussion on the higher \$3.2 PPP poverty line.

Table 6 reports the standard deviation of poverty rates at the \$3.2 poverty line from 2011–12 and 2022–23 HCES. There is

Table 5: Poverty HCR across States

State	Poverty HCR				Log Annual Decline \$3.2 PPP
	\$1.9 PPP		\$3.2 PPP		
	2011–12	2022–23	2011–12	2022–23	
Andaman and Nicobar Islands	0.3	0.0	6.0	0.4	24.6
Andhra Pradesh	4.9	0.5	39.1	8.5	13.9
Arunachal Pradesh	15.0	–	47.0	–	–
Assam	20.7	1.7	70.6	23.8	9.9
Bihar	15.1	2.5	69.6	23.6	9.8
Chhattisgarh	26.5	15.3	73.7	53.7	2.9
Goa	3.1	0.0	22.1	0.5	34.4
Gujarat	8.2	0.4	49.7	12.1	12.8
Haryana	4.9	0.7	30.4	7.4	12.8
Himachal Pradesh	2.8	0.1	27.2	3.1	19.7
Jammu and Kashmir	5.8	0.8	37.5	16.3	7.6
Jharkhand	18.4	9.0	68.8	45.7	3.7
Karnataka	7.9	0.3	45.9	8.6	15.2
Kerala	4.3	0.5	30.3	7.4	12.8
Madhya Pradesh	21.2	3.8	65.2	33.3	6.1
Maharashtra	8.4	2.0	48.6	19.3	8.4
Manipur	24.2	0.7	80.7	14.7	15.5
Meghalaya	4.4	1.4	45.4	16.8	9.0
Mizoram	3.5	0.2	32.0	5.0	16.9
NCT of Delhi	5.9	0.2	36.1	3.6	21.0
Nagaland	0.9	1.1	18.0	11.3	4.2
Odisha	19.2	4.8	66.3	41.0	4.4
Puducherry	0.5	0.3	12.8	3.4	12.1
Punjab	4.6	0.0	34.7	3.1	22.0
Rajasthan	9.5	1.3	51.4	16.1	10.6
Sikkim	0.7	0.0	40.0	0.3	44.5
Tamil Nadu	5.7	0.3	33.1	5.4	16.5
Tripura	8.7	0.1	55.5	4.3	23.3
Uttar Pradesh	19.4	2.7	67.2	32.0	6.7
Uttarakhand	5.2	0.2	42.2	9.6	13.5
West Bengal	11.2	3.3	54.8	33.8	4.4

The state-level estimates are generated following the urbanisation rates from 2011–12 Census data. The HCES 2022–23 weights generate inconsistent urbanisation estimates and therefore cannot be used for generation of adequate-state level poverty HCR. Use of relatively dated weights results in overestimation of poverty HCRs, and actual HCR using subsequent census urbanisation weights would show a relatively smaller HCR.

Source: Authors' computation using HCES 2011–12 and 2022–23.

a substantial decline in the standard deviation over the last decade which supports the hypothesis of inclusive growth, as also indicated by the large decline in both rural and urban inequality. Therefore, the last decade witnessed an unusual period of inclusive growth that saw rapid alleviation of poverty, elimination of extreme poverty, and a reduction in consumption inequality.

In addition to the evidence on inclusive growth, we report detailed subnational poverty estimates separately for rural and urban regions along with the respective poverty lines for each state in Table 7. These estimates are for the World Bank's \$3.2 PPP poverty line. Detailed estimates and corresponding state-level rural and urban poverty line for the \$1.9 PPP cut-off are available at <https://www.living-standards.org/>. For some states, such as Andhra Pradesh and Karnataka, there is not much difference between rural and urban poverty rates.

Table 7: Poverty HCR by Region at \$3.2 PPP

State	Rural Poverty HCR (%)	Urban Poverty HCR (%)	Rural Poverty Line (\$3.2 PPP)	Urban Poverty Line (\$3.2 PPP)
Andaman and Nicobar	0.6	0.1	2,613	3,160
Andhra Pradesh	8.5	8.4	2,688	3,448
Arunachal Pradesh	14.1	–	2,583	3,344
Assam	25.2	11.8	2,636	3,075
Bihar	23.4	25.2	2,222	2,919
Chandigarh	0.0	0.0	2,395	3,475
Chhattisgarh	59.3	30.2	2,196	3,131
Goa	0.3	0.7	2,355	3,588
Gujarat	16.4	5.5	2,603	3,369
Haryana	8.4	5.7	2,903	3,378
Himachal Pradesh	3.0	4.0	2,340	3,153
Jammu and Kashmir	18.5	8.4	2,735	3,274
Jharkhand	50.3	25.6	2,107	3,225
Karnataka	9.3	7.4	2,472	3,459
Kerala	5.2	10.0	3,027	3,202
Madhya Pradesh	36.2	24.7	2,310	2,922
Maharashtra	26.0	10.2	2,916	3,520
Manipur	15.4	12.7	3,822	3,015
Meghalaya	18.4	7.1	2,346	3,074
Mizoram	7.9	1.4	2,645	3,079
NCT of Delhi	0.9	3.7	2,303	3,569
Nagaland	14.9	1.3	2,571	3,128
Odisha	43.5	26.1	2,019	2,684
Puducherry	1.3	4.4	2,545	2,826
Punjab	2.4	4.5	2,973	3,323
Rajasthan	17.6	11.5	2,747	3,101
Sikkim	0.4	0.0	2,662	3,247
Tamil Nadu	6.1	4.5	2,461	3,060
Telangana	6.8	2.3	2,872	3,495
Tripura	4.9	1.8	2,588	2,911
Uttar Pradesh	34.5	22.2	2,329	2,876
Uttarakhand	9.6	9.4	2,473	3,220
West Bengal	37.6	24.1	2,484	3,142

Source: Authors' computation using HCES 2011–12 and 2022–23.

However, for most states (with the exception of Delhi), rural poverty HCR is higher than urban poverty.

Need for a New Poverty Line

The near elimination of extreme poverty in India as per the extreme poverty World Bank line (and the Tendulkar poverty line) necessitates a broader discussion on the reconstitution of a poverty line. India's present official poverty line does not confirm to India's status as a low-middle-income country. The World Bank's \$3.2 PPP poverty line was constituted largely for lower-middle-income countries and therefore it is an appropriate line for poverty measurement, particularly while undertaking international comparisons. There has been a considerable reduction in poverty even at the \$3.2 PPP poverty line. The \$3.2 PPP poverty line can be considered an appropriate extreme poverty line for India while simultaneously constituting another higher poverty line for a more comprehensive measure of poverty. The choice of a new poverty line has important and relevant implications for appropriate policy choices, particularly those pertaining to redistribution and a more comprehensive social safety net.

The overall decline in the share of food consumption across both rural and urban areas is indicative of the need to examine the adequacy of present social welfare schemes. A more comprehensive and better-targeted approach for such programmes could be welfare-enhancing. India's progress in poverty alleviation also provides an opportunity for policymakers to develop a relative poverty measure, that targets the bottom one-third of the population as the major beneficiaries of key social welfare programmes. The choice of a new poverty line must be a simple statistical exercise, while the consideration for what constitutes adequate consumption expenditure (or consumption basket) must be a compassionate one.

An implicit choice would be on the consumption basket that is considered as the standard for a household to be considered as non-poor. For example, ensuring adequate education for children, whether in public or private educational institutions should be included in the consumption basket for non-poor. The construction of a baseline consumption basket for a

non-poor household establishes a benchmark consumption expenditure that can be used for the calculation of poverty. A relative poverty line could be referenced to the consumption expenditures of the 33rd percentile. This allows for a rule-based systemic updating of a relative poverty measure (or deprivation indicator) over time as India's consumption patterns shift during its development trajectory.

In Conclusion

The microdata from HCES 2022–23 allows precise estimates of poverty headcount ratios across different states and separately for rural and urban areas. We provide a detailed set of estimates based on different rural and urban \$1.9 PPP and the \$3.2 PPP poverty lines. Differences in regional inflation dynamics contribute to different nominal poverty lines. In addition to poverty estimates, this paper also provides detailed poverty lines separately for rural and urban regions across different states.

The headline poverty estimates are consistent with earlier findings of near elimination of extreme poverty in India (at the \$1.9 PPP poverty line). These estimates are without imputation of in-kind benefits, which would further reduce the poverty HCR.

Several important policy implications emerge from these developments. For starters, the Tendulkar poverty line is now obsolete in India, and therefore, the country should graduate to a higher poverty line. This is a standard practice as several countries routinely revise their poverty lines based on expanded definitions of deprivation. Given the large decline in poverty HCR in India at the \$3.2 PPP poverty line, we argue that India needs an even higher national poverty line to adequately measure deprivation.

The rapid decline in poverty levels also necessitates a broader discussion on national poverty alleviation programmes, particularly as there is a gradual need to transition towards a more comprehensive social safety net. The inclusion of imputed value of in-kind transfers in the present survey provides a unique opportunity for policy enthusiasts and scholars to explore the efficacy of these transfers along with their welfare implications.

NOTES

- 1 State-level rural and urban inflation from 2011–12 to 2022–23 have been derived from the 2012 CPI rural and urban series.
- 2 For a discussion on the pass-through and criticism of the Bhalla et al (2022a) assumption of unity pass-through, see an e-symposium on estimation of poverty in India conducted by Ideas for India (<https://www.ideasforindia.in/topics/poverty-inequality/introduction-to-e-symposium-estimation-of-poverty-in-india.html>). Poverty estimates originally presented in Bhalla et al (2022a) are the closest to those revealed by HCES 2022–23.
- 3 Bhalla and Bhasin (2024) analysed the MPCF fractiles presented in the fact sheet released by NSS in February. Estimates presented in this paper as generated using the recently released microdata by NSS. Both yield near identical estimates of poverty.

- 4 Detailed poverty HCR for rural and urban areas by state along with the relevant poverty lines for both \$1.9 PPP and \$3.2 PPP are provided in Tables 5 and 7.

REFERENCES

- Bhalla, S, K Bhasin and A Virmani (2022a): "Pandemic, Poverty, and Inequality: Evidence from India," International Monetary Fund, <https://www.imf.org/en/Publications/WP/Issues/2022/04/05/Pandemic-Poverty-and-Inequality-Evidence-from-India-516155>.
- (2022b): "Raising the Standard: Time for a Higher Poverty Line in India," Brookings Institution, <https://www.brookings.edu/articles/raising-the-standard-time-for-a-higher-poverty-line-in-india/>.
- Bhalla, S and K Bhasin (2024): "India Eliminates Extreme Poverty," Brookings Institution, <https://www.brookings.edu/articles/india-eliminates-extreme-poverty/>.

- Edochie, IN, S Freije-Rodriguez, C Lakner, L Moreno Herrera, D L Newhouse, S Sinha Roy and N Yonzan (2022): "What Do We Know About Poverty in India in 2017/18?" <https://documents1.worldbank.org/curated/en/5847016442663-45768/pdf/What-Do-We-Know-about-Poverty-in-India-in-2017-18.pdf>.
- Meyer, B D, W K Mokand J X Sullivan (2015): "Household Surveys in Crisis," *Journal of Economic Perspectives*, Vol 29, No 4, pp 199–226.
- Newhouse, D L and P Vyas (2019): "Estimating Poverty in India without Expenditure Data: A Survey-to-survey Imputation Approach," World Bank Policy Research Working Paper, (8878).
- Roy, Sinha S and R Van Der Weide (2022): "Poverty in India Has Declined Over the Last Decade But Not as Much as Previously Thought," <https://documents1.worldbank.org/curated/en/099-249204052228866/pdf/IDU1333e60f9112671-45601be83193783b77e67a.pdf>, SSRN 4427524.